

REMARKS

The Office Action mailed June 30, 2006, has been received and reviewed. Claims 1 through 14 are currently pending in the application. Claims 1 through 14 stand rejected. Applicant has canceled claim 3, amended claim 1, and respectfully requests reconsideration of the application as amended herein.

Applicants have amended claim 1 to incorporate the subject matter of claim 3, now canceled. No new matter has been added.

Preliminary Amendment

Applicant's undersigned attorney notes the filing herein of a Preliminary Amendment on July 16, 2004, which filing was not acknowledged in the outstanding Office Action. Should the Preliminary Amendment have failed for some reason to have been entered in the Office file, Applicant's undersigned attorney will be happy to have a true copy thereof hand-delivered to the Examiner.

35 U.S.C. § 102 Anticipation Rejections

Anticipation Rejection Based on U.S. Patent Publication No. 2003/0134450 to Lee

Claims 1 through 14 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Lee (U.S. Patent Publication No. 2003/0134450). Applicant respectfully traverses this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The subject matter of claim 1, as amended, is not described, expressly or inherently, in Lee. Applicants note that claims 1 through 14 are method claims. Lee employs a substrate in the form of a flexible film interposer 36' having slots or recesses 38' and 40' which extend from a

first surface 42' thereof through the material of the interposer, to a bond pad in the form of a conductive trace 44' formed on the second surface 46' of interposer 36'. Only the recesses 40' are "of a size and configuration to receive" a plurality of conductive bumps of a semiconductor die, recesses , recesses 38' being used for TAB or wire bonding (par. 0032).

Applicants' claim 1 as presently amended requires, inter alia, "forming at least one opening in the second surface of the substrate *in communication with* at least one recess of the plurality of recesses." As claim 1 requires not only the act of "forming a plurality of recesses in the first surface of the substrate and through the dielectric layer to a depth through the dielectric layer, each of the plurality of recesses exposing at least a portion of a contiguous conductive element adjacent the second surface *and of a size and configuration to receive the plurality of conductive bumps of the semiconductor die*" but also "forming at least one opening in the second surface of the substrate *in communication with* at least one recess of the plurality of recesses," Lee fails to anticipate the claim. Stated another way, the claim requires that at least one opening be formed in the second surface of the substrate *in communication with* at least one recess "of a size and configuration" to receive one of the plurality of conductive bumps of the semiconductor die. Lee does not form an opening in the second surface of interposer 36' whatsoever, whether or not in communication with any recess 38' or 40'. Applicants also note that the disposition of a solder mask layer 49" over the conductive traces 44' does not form an opening in the second surface of interposer 36' and, if solder mask layer 49" is attempted to be construed as part of the substrate, the openings therein are not formed in communication with any of the recesses 40' of a size and configuration to receive a conductive bump 60' of semiconductor die 54', but only with recesses 38'. Therefore, claim 1 is not anticipated.

Claims 2 and 4 through 14 are allowable as depending from claim 1.

Applicants also note that Lee is employed as a reference under 35 U.S.C. 102(e).

Applicants note that Lee is commonly assigned with the present application to Micron Technology, Inc. and is, therefore, not available as a reference under 35 U.S.C. 103(c).

Applicants respectfully refer the Examiner to Reel 12507, Frame 133 of the Assignment records of the U.S. Patent and Trademark Office for the assignment data for Lee.

Anticipation Rejection Based on U.S. Patent No. 6,338,985 to Greenwood

Claims 1 through 3, 5, 8 through 10, 12 and 14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Greenwood (U.S. Patent No. 6,338,985). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 1, as presently amended, is not anticipated by Greenwood. Applicants respectfully assert that the Examiner has misapprehended the description of the reference. More specifically, the recesses 32 of Greenwood are not formed to be sized and configured to receive conductive bumps 42 of a semiconductor die 40, as recesses 32 lie on the opposite side of dielectric layer 15 from semiconductor die 40 (See FIG. 7 of Greenwood). Moreover, as claim 1 is presently amended, it recites “forming at least one opening in the second surface of the substrate in communication with at least one recess of the plurality of recesses.” The reference to FIG. 5 and Col. 4, lines 15-56 of Greenwood by the Examiner (made in connection with the rejection of claim 3) does not support a description of this claimed subject matter, formerly in claim 3. FIG. 5 merely depicts traces 28 comprising pads 24 and lands 26, which extend over the surface of dielectric layer 15. Recesses (apertures) 32 are not in communication with any openings extending from the opposing side of dielectric layer 15 and, as noted, are not sized and configured to receive conductive bumps 42 of a semiconductor die 40. As depicted in FIG. 7, solder mask 34 is formed over metallization 22 on the side thereof opposite that in contact with dielectric layer 15, and includes recesses (apertures) 36 which expose pads 24. It is these apertures 36, as depicted in FIG. 7, not apertures 32, into which conductive bumps 42 of a semiconductor die 40 are partially inserted. With respect to either of recesses 32 and recesses 36, there is no formation of an opening in a surface of dielectric layer 15 or solder mask 34 in communication with a recess 32 or a recess 36. Accordingly, the claim is not anticipated.

Claims 2, 5, 8-10, 12 and 14 are allowable as depending from claim 1.

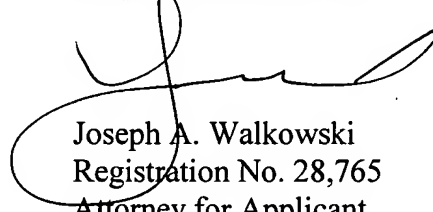
ENTRY OF AMENDMENTS

The amendments to claim 1 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 1, 2 and 4 through 14 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'J. Walkowski', is written over the printed name and title of the attorney.

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